

Pollution Prevention Virginia

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SECRETARY WOODLEY ANNOUNCES "VIP2" AT VMI ENVIRONMENT VIRGINIA'99

Secretary of Natural Resources John Paul Woodley, Jr. officially announced Governor Gilmore's pollution prevention initiative, "Virginia Innovations in Pollution Prevention" or "VIP2", at the Environment Virginia '99 conference at Virginia Military Institute in April. VIP2 is Governor Gilmore's program to improve environmental quality in the Commonwealth through non-traditional approaches that reward innovation and leadership. The Gilmore administration believes that although Virginia has made great progress through traditional regulatory programs, we are reaching the limitations of those programs. The target for the next century must be to go "beyond compliance" and



move toward a sustainable economy of cleaner, more efficient technologies and operations. The Gilmore administration is promoting a long-term, voluntary goal of "zero discharge" to the environment.

To begin this movement towards zero discharge, in July of 1998, Governor Gilmore directed the creation of the Division of Pollution Prevention and Compliance Assistance within the DEQ. The new Division reports to the Director and includes the Office of Pollution Prevention, Small Business Assistance, Environmental Education, Environmental Technology and SARA Title III programs. With this organization in place, the Division began formulating the VIP2 initiative.

The VIP2 initiative outlines the

strategies for meeting the Governor's objectives with respect to promoting pollution prevention, innovative technology, and public outreach. It consists of seven components designed to significantly expand the level of pollution prevention activity within the public and private sectors. Although DEQ will be responsible for implementing these program components, the related activities of other state agencies, such as the Department of Conservation and Recreation and the Chesapeake Bay Local Assistance Department, will be coordinated with the VIP2 initiative. VIP2 includes the following:



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THE PBT STORY

By Tad Radzinski and Noah Borenstein, EPA Region III

Recently, there has been a great deal of activity within the U.S. Environmental Protection Agency (EPA) surrounding PBT chemicals. You ask, "What is a PBT?". The acronym stands for **Persistent, Bioaccumulative, and Toxic** and will become increasingly familiar in the future.

PBTs in the Environment

The PBT story starts like this: PBT chemicals do not break down or decrease in potency when released to the environment, even if released in very small, legally permitted quantities. Over time, these chemicals are likely to accumulate in soils or other environmental media. These chemicals can also be absorbed or ingested by plants and animals, accumulate in animal tissues to be passed through the food chain, and potentially cause long-term human health effects or ecological problems

such as cancer in humans or reduced ecological populations. For this reason, PBT chemicals are a national and international environmental concern long after they are used, generated in waste or released to the environment.

Several programs, regulatory changes, and initiatives have been developed that place a focus on PBT chemicals. The *Waste Minimization National Plan* is a voluntary program developed by industry, states, environmental groups, and citizens to reduce the presence of the most PBT chemicals in the nation's hazardous waste by 50% by the year 2005. In developing the plan, EPA was advised by stakeholders that the chemicals should be reduced at the source where pos-



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The seven elements of VIP2:

- **Environmental Excellence Program**, an incentive-based program recognizing leadership in environmental management systems and environmental performance for business, industry and government;
- **Mentoring**, a business-to-business mentoring network for pollution prevention, environmental management systems, and compliance;
- **Promoting Environmental Technology**, for a cleaner, more efficient Virginia;
- **Financial incentives** for pollution prevention and innovative technology investments;
- **Integration of opportunities for voluntary pollution prevention** into environmental programs;
- **Expanded pollution prevention technical assistance services** for Virginia facilities; and,
- **Environmental Education** activities developed to integrate pollution prevention and innovative technology into Virginia school programs and general public outreach.

THE PBT STORY CONTINUED

sible, and, when source reduction is not feasible, the chemicals should be recycled in an environmentally sound manner.

RCRA PBT List

To address these recommendations, EPA first developed the Waste Minimization Prioritization Tool, a software program that scores thousands of chemicals based on their mass generated, persistence, bioaccumulation potential, and toxicity (both ecological and human). EPA then identified the chemicals of greatest concern to the Resource Conservation and Recovery Act (RCRA) program on a national basis. The chemicals were ranked based on PBT score, prevalence, presence in contaminated soils or sediments, and difficulty to manage or clean up. The proposed **RCRA PBT List**, published in the Federal Register for public comment on November 9, 1998, contains 53 chemicals that ranked highest for the factors listed above. The table below depicts the PBT chemicals which are prevalent in Virginia based on a review of selected 1995 National Biennial Hazardous Waste Reporting System (BRS) data and 1995 Toxic Release Inventory data. EPA is presently reviewing public comments received during the comment period and anticipates publishing a response to those comments and final RCRA PBT List in late 1999.

PBT Chemicals

1,1,1-Trichloroethane	Copper
1,2,4-Trichlorobenzene	Cyanide
Dibutylphthalate	Lead
Naphthalene	Mercury
Antimony	Nickel
Arsenic	Phenol
Cadmium	Selenium
Chloroform	Zinc
Chromium	

PBTs in Virginia

Based on 1995 BRS data of the top 50 large quantity generators located in Virginia, approximately 788,000 tons of PBT-containing wastes have been generated by 26 different industrial groups. A breakdown according to Standard Industrial Classification (SIC) groups are shown in the table on page 3.

By far, the largest PBT wastes generating industrial segment in the state, based on 1995 BRS data, is the Printed Circuit Board Manufacturing segment (SIC 3672), accounting for 74.5% of the total. The top four SIC segments account for over 95% of the PBT-containing wastes.

Assistance to Reduce PBTs

If your facility generates any of the PBT chemicals listed above, whether or not it is in the SIC categories identified in the table above, assistance is available to you. Virginia DEQ is working closely with EPA Region III to assist generators of PBT chemicals with developing

Committees have been or will be formed to guide the development and advancement of each of these program elements. Several committees have already made significant progress towards the implementation of the various elements of the VIP2 initiative.

If you would like more information on Virginia Innovations in Pollution Prevention, you can access the VIP2 website at www.deq.state.va.us/vip2 or contact DEQ's Sharon Baxter at 804-698-4344.

and implementing waste minimization programs at their facilities. This technical support service is offered free of charge and is not related to any enforcement program. Contact **Bill Sarnecky** at DEQ's Office of Pollution Prevention at **(804) 698-4341** for more information. To learn more about development of the draft RCRA PBT List visit the EPA web page at <http://www.epa.gov/wastemin>.

Multimedia Strategy for PBTs

As noted above, the draft RCRA PBT list of chemicals has been developed to implement voluntary pollution prevention initiatives under the Waste Minimization National Plan. Another EPA initiative focused on PBT chemicals is the **Multimedia Strategy for Priority Persistent, Bioaccumulative, and Toxic Pollutants**. The goal of the strategy is to further reduce risks to human health and the environment from existing and future exposure to priority PBT pollutants. It builds on existing EPA commitments related to priority pollutants, such as the 1997 Canada - U.S. Binational Toxics Strategy (BNS), the North American Agreement on Environmental Cooperation, and the recently released the Clean Water Action Plan. EPA is initially focusing action

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THE PBT STORY CONTINUED

on 12 BNS Level 1 Substances: aldrin/dieldrin, benzo(a)pyrene, chlordane, DDT, hexachlorobenzene, alkyl-lead, mercury and compounds, mirex, octachlorostyrene, polychlorinated biphenyls (PCBs), toxaphene, dioxins and furans (six of these chemicals also appear in the draft RCRA PBT list).

EPA is developing action plans that will utilize a full range of tools to these 12 (and later other) PBTs. These tools include international, voluntary, regulatory, programmatic, and outreach tools. At this time, EPA has developed an action plan for mercury and is evaluating other PBTs for action plan development. For more information on the PBT strategy, visit EPA's web page at <http://www.epa.gov/opptintr/pbt/index.html>

PBT-Related Regulatory Changes

Related to the PBT pollutant strategy described above, several potential changes have been related to PBT chemicals have been recently published by EPA in the Federal Register. As part of the **Toxic Substances Control Act**, new chemicals that are manufactured in the United States or new chemicals that are imported would be evaluated against established criteria for persistence and bioaccumulation. Chemicals that meet the criteria will be required to undergo more extensive testing or face restrictions prior to filing a Premanufacturing Notice. The notice for public comment was published in the Federal Register on October 5, 1998. Comments that were received on the notice will be used to develop criteria for identifying future PBT chemicals.

Two rule changes to the to the **Emergency Planning and Community Right-to-know Act (EPCRA)**, **Toxic Release Inventory (TRI)** have recently been proposed in the Federal Register. One proposed rule published in the Federal Register on January 5, 1999, and February 23, 1999, adds new PBT chemicals and lowers reporting thresholds for

Distribution of PBT Wastes in Virginia by SIC Code

SIC Code	Description	Quantity (tons)
3672	Printed Circuit Boards	587,346
3714	Motor Vehicle Parts	92,663
347	Plating & Polishing	48,679
3498	Misc. Fabricated Wire Products	29,537
2514	Metal Household Furniture	16,317
3731	Shipbuilding & Repairing	5,033
4953	Transportation & Utilities	1,540
3321	Gray & Ductile Iron Foundries	1,424
7389	Business Services, NEC	957
9711	National Security	924
2851	Paints & Allied Products	837
3479	Metal Coating & Allied Services	776
3671	Electron Tubes	593
9661	Space Research & Technology	493
3443	Fabricated Plate Work	492
	Many Others	519
TOTAL		788,132

Table 2: Referred to on Page 2

existing chemicals covered by the Toxics Release Inventory. Under this proposed rule, certain PBT chemicals that would be categorized as "highly PBT" (such as mercury, polychlorinated biphenyls, polycyclic aromatic compounds, etc.) would trigger a very low reporting threshold (10 pounds or less). Other PBT chemicals would have a lower reporting threshold of 100 pounds. Comments that were received on this proposed rule are currently being evaluated, and a final action is expected by September, 1999.

Similarly, a second proposed rule published in the Federal Register on August 3, 1999 proposes lowering the reporting threshold for lead and lead

compounds to 10 pounds. The comment period on this proposal closes on September 17, 1999.

Summary

This brief review of activities surrounding Persistent Bioaccumulative and Toxic chemicals illustrates that a PBT-focus is underway and most likely will continue to expand as more is learned about the chemicals used by our society. Stay tuned for future updates on the PBT-related programs and activities described above. More importantly, do your part to utilize the available resources to assist you with minimizing or eliminating these chemicals from your waste.

PBT LIST AVAILABLE

The Waste Minimization Branch of EPA's Office of Solid Waste and Emergency Response recently released the draft RCRA (Resource Conservation & Recovery Act) PBT (Persistent, Bioaccumulative, and Toxic) Chemical List. The List contains 53 chemicals that will be

the focus of source reduction and recycling efforts nationally. The List and additional information about the Waste Minimization National Plan can be found on the web at www.epa.gov/wastemin or by contacting the EPA's Waste Minimization Branch at 703-308-8489.

"VIRGINIA'S SUSTAINABLE FUTURE" CONFERENCE A HUGE SUCCESS

By Annette Osso, Virginia Housing & the Environment Network

What is Sustainability?

Products, systems, buildings and land planning that create and promote an environment for healthy human living which can be sustained into the future--unpolluted by its waste or byproducts; thus, preserving and maintaining our natural resources for the future.

-Austin, TX 1997 Green Building Conference

On June 16-18, the Richmond Marriott was the site of Virginia's first-ever statewide sustainability conference entitled, "Virginia's Sustainable Future: Solutions for the Environment, Business and Communities." Over 470 participants, speakers, and exhibitors attended the event representing a diverse range of interests from environmental groups, to federal, state, and local government, to the construction and manufacturing industries, to consultants and vendors, and other private businesses. Participants heard from nationally-known speakers and many others involved in this movement, who educated them about the concepts and practices of sustainable development, green building design, innovative technologies, and industrial stewardship.

Keynote speakers for the conference included: Ray Anderson, Interface, Inc.; William Browning, Green Development Services, Rocky Mountain Institute; David Crockett, City of Chattanooga; and William McDonough, University of Virginia. Each of these speakers has been a leader nationwide in the development and promotion of sustainable concepts and activities. Furthermore, they together provided inspirational insight, logic, and understanding for the participants, many of whom were just hearing the message of sustainability for the first time. In



Bill McDonough
University of Virginia

including: Lieutenant Governor John Hager; Secretary of Natural Resources John Paul Woodley, Jr; State Corporation Commissioner Hullahen Williams Moore; and DEQ's Director Dennis Treacy.

Organization and funding of the project was a major collaborative effort, and by itself succeeded in creating dialogue and partnerships between a diverse group of stakeholders. The conference was presented by the Virginia Housing & the Environment Network. Major financial supporters included the National Oceanic and Atmospheric Administration, The U.S. Department of Energy, the U.S. Environmental Protection Agency, the Virginia Coastal Program, the Virginia Department of Environmental Quality, the Virginia Housing Development Authority, the Virginia Office of Pollution Prevention, the Virginia Environmental Endowment, Allied Signal, and the Local Initiatives Support Corporation.

The conference succeeded in its goal to heighten awareness about the concepts of sustainability, and it surpassed all of its expectations for attendance, the exchange of ideas, and exposing Virginians to noteworthy speakers and



Ray Anderson
Interface, Inc.



concepts. Participants left the conference informed and enthusiastic about sustainable concepts, and eager to implement those ideas when possible. State officials left with the understanding that real changes in thinking are happening and the message that changes must happen to ensure a viable future.

The Next Steps

Now that many Virginians are excited about sustainability, where do we go from here? The Virginia's Sustainable Future Conference Planning Committee met following the conference to address this issue, and it has made several main recommendations. First, a second conference is recommended to be held in June 2001. Second, three(3) regional conferences are proposed for the next year - western Virginia, northern Virginia, and Hampton Roads. Third, opportunities to discuss and promote sustainability at all related conferences and public forums should be pursued. These recommendations will help to sustain the current enthusiasm, but a truly sustainable future will require that all Virginians do what they can to move towards making substantive changes in their business activities and in their own lifestyles.

For more information on sustainable activities, contact the Virginia Housing & the Environment Network at 703-486-2966.

SUSTAINABILITY ON THE WEB

- **Library on Sustainable Development:** www.rff.org/intersections/sust_dev.htm
- **Business & Sustainable Development:** 192.197.196.001/business
- **Electronic Tools for Community Sustainability:** cpcug.org/user/dcf
- **Florida Internet Center for Understanding Sustainability:** www.ficus.usf.edu
- **Sustainable Architecture:** www.umich.edu/~nppcpub/resources/compendia/architecture.html
- **Environmentally Preferable Purchasing:** www.epa.gov/opptintr/epp
- **Article on Eco-Industrial Parks:** www.context.org/ICLIB/IC41/PinchotE.htm
- **Sustainable Business:** www.sustainablebusiness.com
- **Center of Excellence for Sustainable Development:** www.sustainable.doe.gov

NATIONAL POLLUTION PREVENTION WEEK

Virginia is recognizing **September 20th thru September 24th as Pollution Prevention Week in the Commonwealth of Virginia.** The Commonwealth's recognition coincides with National Pollution Prevention Week which originated in 1992 and has been celebrated across the nation since 1995. Pollution Prevention Week, or "P2 Week", is a time when businesses, citizens and government can join forces to highlight the importance and benefits of pollution prevention. Governor Gilmore has expressed his commitment to pollution prevention and other voluntary initiatives which advance sound, common sense policies to protect and enhance Virginia's environment.

P2 Week is also a registered event of Governor Gilmore's Fall River Renaissance campaign, a yearly celebration of Virginia's waters and the volunteers who help protect and improve them. Anyone who participates in P2 Week activities will also receive a Fall River Renaissance "certificate of recognition" from the Governor!

Virginia's Office of Pollution Prevention will promote P2 Week with events and activities around the state, and it will challenge businesses and other organizations to incorporate pollution prevention in their work activities. Last year, several businesses used P2 Week as a chance to promote their own waste reduction efforts. We received many



Governor Gilmore recorded a PSA for last year's P2 Week.

innovative P2 suggestions last year that we will use as examples this year. Below are listed the events and activities which have been planned so far.

- Governor Gilmore's issuance of a declaration recognizing P2 Week in the Commonwealth with accompanying press release.
- Brownbag lunch feature at DEQ central and regional offices.
- Visits to schools by P2 contacts, and development of a P2 Week activity packet for students.
- "P2 tip" E-mails will be sent daily to all state agency P2 contacts and interested businesses and other organizations.
- "P2 Everyday" activity asking all participants to document their waste reducing activities throughout the week. Prizes will be presented for the most creative P2 activities, and all participants receive a P2 Everyday reusable drinking cup!
- P2 Posters and mini-posters - the National P2 Roundtable has made available 2'X3' color posters; also, DEQ will produce "mini-posters" encouraging P2 activities around the office (energy conservation, solid waste redux, etc.).

- P2 Week displays at DEQ central and regional offices.

- P2 Week Website - will provide information on all P2 Week events and facilitate participation in P2 Week activities.

- Feature of P2 Week in Fall River Renaissance (FRR) advertorial in the Richmond Times-Dispatch, & FRR Certificates from the Governor.

If you would like to help promote P2 Week at your place of business, let us know; and we will arrange for you to receive the emails, materials, or other information. Call 804-698-4235 or email jkcomfort@deq.state.va.us.



P2 TIP:

Instead of cleaning paint brushes each time you use them, place them in a ziplock bag and put them in the refrigerator or freezer. This will save the use of paint thinner and the time of cleaning.

MEDICAL WASTE

DEQ co-sponsored and hosted a series of 4 workshops for the medical community during June and July at the Piedmont (Richmond), Northern (Woodbridge), West Central (Roanoke), and Tidewater (VaBeach) regional offices. The workshops were sponsored in response to the recent rash of medical waste violations at Virginia landfills. The workshops were co-sponsored with the Virginia Hospital & Healthcare Association, Virginia Health Care Waste Management Cooperative, Virginia Waste Industries Association, Waste Management, Inc., and Browning-Ferris Industries. They clearly defined procedures and regulations for handling and disposal of regulated medical wastes. DEQ's OPP was involved in the preparation of the workshops, and as a followup, "healthcare P2" will be the focus of EPA Region III's Winter Conference which will be held January 19-21, 2000 in Richmond.

VIRGINIA DENTAL ASSOCIATION

The Environmental Subcommittee of the Virginia Dental Association (VDA) has initiated a project to collect surplus mercury and mercury-containing dental amalgams from all dentists in Virginia. Although mercury-containing amalgams are no longer used, many dentists still have old supplies that they cannot easily dispose of or store properly. The VDA has worked with DEQ and the Virginia Health Department (VDH) to develop a plan for collecting and recycling these hazardous materials

through a mercury recycler. The VDH is in the process of designating approximately 12 of its dental clinics around the state as collection sites where local dentists can bring or send their mercury-containing materials. The contracted mercury recycler will periodically visit the sites to collect the accumulated materials. In support of the project, DEQ's Office of Pollution Prevention is purchasing Mercury Spill Kits for each of the collection sites.

BUSINESSES FOR THE BAY SPOTLIGHT

MENTORS, GET READY TO WORK!

There are currently over 100 individuals who have volunteered to help other businesses through the B4B mentoring program, and 67 of them are from Virginia. Many of you have accomplished a great deal in providing assistance to other businesses and promoting the program. However, we haven't been working you!

The mentoring program is an incredible resource that for the most part has been left untapped. This has been a concern of the program for some time, and it was one of the main topics of discussion at our most recent Mentors Meeting which was held on June 16th at the Richmond Marriott in conjunction with the "Virginia's Sustainable Future"

conference. Virginia recently formed a "B4B Marketing Subcommittee" to address this issue and others related to further expansion and promotion of mentors and B4B. Details of Virginia's new B4B Marketing Plan are still being finalized, but mentoring will be at the center of the plan. Several major events are planned to market and showcase the valuable resource that Virginia businesses have available to them through our program. Also, Governor Gilmore's new "VIP2" program (see page 1) will greatly facilitate the use of our mentors, and provide a reliable source of mentor clients.



Chesapeake Bay Program

B4B's 1st Annual Conference!

One of the first recommendations of the new B4B Marketing Subcommittee was to hold a high-profile annual B4B conference for all of its members. This conference will be held in Annapolis, MD in late Fall, and it will feature this year's B4B Excellence Awards. Virginia has already volunteered to host next year's conference "on the Bay". Additional details will be mailed to all members, but you can call Kelly Mecum at 1-800-YOURBAY if you have questions.

VIRGINIA BUSINESSES FOR THE BAY MENTORS

Paul Eves, A Case for Clocks
L. Evans Drake, Allied Signal
Marise Textor, Allied Signal
Steve Yob, BFI
Greg Marsh, C.R. Hudgins Plating, Inc.
Monty Hearing, Canon Virginia, Inc.
Ernie Hartman, Canon Virginia, Inc.
Joan Salvati, Chesterfield County
Denise Jeffries, City of Newport News
Lynn Miller, City of Winchester
Kevin Knapp, Colonial Circuits, Inc.
Michael Faulk, Cooper Automotive
Mark Hogan, Cooper Automotive
Stu McMichael, Custom Print, Inc.
Debbie Melvin, Department of Business Assistance
Anne Davis, Diesel Tech, Inc.
*Bob Dunn, DuPont
Tom Robertson, DuPont - Spruance
Lewis Garrett, Dupont Company
W.B. Lanning, DuPont Polyester Films
Katie Snyder, E.I. DuPont James River
Emma Ramsey, Elizabeth River Project
Anil Kumar, Engineering & Environment, Inc.

Benji Brackman, Fauquier County
Gary Davis, Ford Motor Co.
Terry Banks, Fort A.P. Hill
Scott Wolff, Hercules, Inc.
Mark A. Haley, Hopewell Regional WWTF
Nancy Gray, HRSD
Curtis Ewing, Lear Corp.
Mary Barnhart, Lear Corp.
Bryan Winter, Lear Corp.
Dorothy Hunter, Lear Corporation
Susie Roberts, Lear Corporation
Joyce Zirk, Lear Corporation
Valcin Ozbey, Liberty Fabrics
Jay Tice, Manufacturing Technology Center
Tedd Jett, Merck
Larry Blanchfield, Newport News Shipbuilding
Rob Powell, Norfolk Boat Works Inc.
Rob Arner, Northern VA PDC
Van White, NOVA Chemicals
Jeffrey Rezin, O'Sullivan Corporation
Bob Gebeaux, Port Kinsale Marina
Deb Oliver, Prince William County
Wayne Taft, PrintPack, Inc.
Kary Phillips, Pure Water 2000 Forum

John Handzo, City of Richmond
Barry Marten, Siemens Automotive
Dan Hickey, Smith Point Marina
Felicia Blow, SPSA
Stan W. Brewer, St. Laurent Paper Products Corp.
John T. Clark, The Fauquier Hospital, Inc.
Bill Hastings, Thomas Dale High School
Gordon Shelton, Tidewater Yacht
Steve Thomas, Toray Plastics
Carol Wampler, VA Manufacturers Association
Jud White, Virginia Power
Cyndi Yodzis, Virginia Power
Tim Myers, Virginia Recycling Association
Jim Love, WAKO
James Elliott, Wampler Foods
Dave Frackelton, Wampler Foods
Thomas Fryer, Washington Gas
Joan LeLacheur, Washington Metro Area Transit Authority
Kevin Selby, White Oak Semiconductor
Lisa Stowell, Wormley Creek Marina Corp.

* Dupont's Bob Dunn was B4B's "Mentor of the Year" for 1998.

O'SULLIVAN TAKES ENVIRONMENTAL STEWARDSHIP SERIOUSLY

By Jeff Rezin, O'Sullivan Corporation

Headquartered in Winchester, O'Sullivan Corporation is a custom manufacturer of premium-grade vinyl for automotive, medical, information packaging, pool, home furnishing and geomembrane products. In addition, the corporation has the capability to emboss, print, paint, laminate, slit, polish, vacuum-form, die-cut material to meet a wide range of customer needs. Currently ISO 9001 and QS 9000 certified, plans include moving to ISO 14000 certifi-

cation later this year.

O'Sullivan Corporation takes environmental stewardship seriously, and it embraces the concepts of pollution prevention and waste



O'Sullivan's Corporation Jeff Rezin

minimization. O'Sullivan's Environmental Stewardship Program encourages employees to

recommend process changes which conserve natural resources while increasing operational efficiencies. The stewardship program began with the elimination of using Abram's Creek stream water as a non-contact cooling water source. At one point in the early 1980's, water consumption was up to one and a half million gallons of water a day. A systematic

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BUSINESSES FOR THE BAY SPOTLIGHT

FORD TRUCKS GET MORE MILEAGE FROM THEIR SOLVENTS

By Keith Boisvert, DEQ's Office of Pollution Prevention

In March, members of the Department of Environmental Quality's Office of Pollution Prevention went on a site visit to the Norfolk Ford assembly plant. This approximately 100-acre plant, located on the East Branch of the Elizabeth River employs 2400 people responsible for the manufacture of F150 and F250 pickup trucks. This business has shown a high level of commitment to preserving the environment. The Norfolk plant is ISO 14000 certified, and it has employed many innovative techniques to reduce pollution at the source. Ford is a "River Star" for the Elizabeth River Project, and it is a member of the Chesapeake Bay Program's "Businesses for the Bay" program.

Concepts such as recycling, material substitutions, vendor-mediated waste reduction, process improvements, inventory control, and a preventive maintenance plan, have all contributed to a cleaner, more efficient plant. For instance, the recycling of rinse water and chemicals has reduced paint sludge disposal from 2624 cubic yards to zero. Also, a major material substitution is the replacement of chrome, which can cause wastewater and



Norfolk Assembly Plant

health problems, with less invasive metals.

Some of the most interesting waste minimization ideas were the result of a per unit produced method of paying vendors called the Total Fluids Program. This encouraged the reduction of material use at the source because vendors needed efficient manufacturing processes to minimize the use of their respective products. As a result of this program solvent used for cutting paint was reduced by one-third, waste per unit produced was reduced from 500 to 80 pounds per vehicle and overall waste management costs were decreased.

Many process changes were spawned by the Total Fluids Program. Most of these changes focused on painting. In order to increase paint transfer efficiency,

painting booths with balanced airflow were installed, truck bodies are now dipped into finishes, and electrostatic spray guns are now used. To reduce the cleaning of spray guns, each sprayer is designated a single color and trucks of the same color are painted consecutively when possible.

This Ford facility has combined standard concepts in pollution prevention with innovative ideas resulting in waste minimization and cost efficiency. When one considers the fact that approximately 15.5 million cars are made in the United States per year, improvements such as these result in significant environmental benefits. Ford's application of these ideas reaffirm a commitment to Virginia's environment and pave the way for increasing improvements towards a sustainable future. Inspired by these successes, Ford's commitment to pollution prevention continues, as demonstrated by its bid for ISO 14000 recertification this year.

For additional information, contact Gary Davis at Ford's Norfolk Assembly Plant. He can be reached at 757-494-2059.



Member since 1998

O'SULLIVAN CORP. CONTINUED

approach was used to eliminate 100% of the dependence on the stream by replacing it with chilled water cooling loops. Zero discharge was the goal, and it was achieved. As an added benefit, product quality can be more closely controlled because the constant temperature of the chilled water reduces variation in the production process. Cost and quality benefits are demonstrated as a result of this environmental stewardship activity.

Through the promotion of O'Sullivan's stewardship program, waste minimization concepts have been extended to all other areas of the facility operations as well. For instance, recycling opportunities were identified and developed into a

program that consumes 38 million pounds of collected flexible vinyl plastic. Working closely with customers that use the company's product, trim return programs were developed to reduce disposal to landfills. O'Sullivan's program has been recognized by the automotive industry as a model for its recycling strategies and end-of-vehicle-life initiatives.

Communication and outreach is now an integral component of O'Sullivan's product stewardship and pollution prevention activities. Information sharing promotes education and opportunities for additional environmental stewardship initiatives. Through student mentoring, conference presentations,

as well as business and association meetings, stewardship is being passed to others that are working to reduce waste and pollution. Voluntary programs such as Businesses for the Bay and EPA's WasteWise are beneficial tools to get companies, regulators and environmental action groups working toward common goals.



Jeff Rezin is Director of Environmental Affairs for O'Sullivan Corporation and serves as a business-to-business Mentor for Businesses for the Bay. O'Sullivan Corporation has been a facility member of Businesses for the Bay since 1997. For more information, contact Jeff at 540-665-2511.



Member since 1997

STATE AGENCY / PRODUCT SPOTLIGHT

LAUNDRIES IN STATE-OPERATED HOSPITALS ARE "CLEANING UP WITH OZONE TECHNOLOGY"

By Bill Sarnecky, DEQ's Office of Pollution Prevention

Ozone laundry systems are gaining acceptance in both the institutional and commercial marketplace because of their capacity to reduce energy, water and sewer, and labor costs.

After considerable research, the Commonwealth of Virginia's Department of Mental Health, Substance Abuse Services, and Mental Retardation (DMHMR&SAS)

awarded a contract for five ozone laundering systems to a business alliance composed of GuestCare Inc. and Evantage, a division of Virginia Power. The contract includes hospitals located in Lynchburg, Petersburg, Williamsburg, Staunton and Burkeville.

Guestcare completed the installation of the first ozone laundry system at the Central Virginia Training Center in Lynchburg last summer. The hospital processes over three million pounds of laundry annually for its patients. Calvin Vest, the laundry manager, reports that the

ozone system has reduced water use by 25%, and the washing cycle has been shortened by 20%. The amounts of laundry chemicals needed for cleaning have been decreased by 45%, which results in savings in chemical costs and in reduced linen purchases due to a longer service life.

The GuestCare process electrically generates ozone gas which is injected into the wash waters. Ozone (O₃) is an unstable gas and decomposes rapidly into normal O₂, creating its tremendous oxidation potential. Since ozone gas is not transportable or storable, it must be generated close to its point of use. In application, ozone is an extremely powerful oxidant that works 3,000 times faster and is 150% more effective than chlorine. It is also a powerful biocidal, destroying bacteria, deactivating viruses and controlling odors. Analyses have confirmed a 99.5-99.7% bacterial and viral kill count from ozone laundering.

John DePerro, Director of Engineering for DMHMR&SAS, said that



Calvin Vest, laundry manager at the Central Virginia Training Center Hospital, explains the GuestCare ozone control system at the Lynchburg Facility

by converting to ozone, the laundries would "substantially reduce consumption of natural resources while saving significant money for the state. We are constantly challenged to find innovative ways to help the state modernize processes to achieve these environmental and economic goals while taking excellent care of our patients."

The second ozone installation at Petersburg will provide even greater savings by adapting the system to recycle and reuse 80% of the laundry washwaters.

For more information contact Colin Pharr of GuestCare Inc. at (301) 526-0922.

RENEWED STATE AGENCY EFFORTS

In February, the Office of Pollution Prevention hired Keith Boisvert as the State Agency Pollution Prevention Coordinator. Since then, he has focused on increasing P2-related outreach to state agencies and providing assistance in the coordination and implementation of their P2 plans. On June 2, a meeting of the "State Agency Pollution Prevention Committee" was held affording the opportunity for people from other agencies to meet the new coordinator and share ideas with their peers. Interested parties from agencies like the Department of General Services and the Division of Mines Minerals and Energy also participated and offered their services applicable to P2. These meetings will now be held quarterly, and the next meeting will be in late

September.

The project continually moves forward and registers successes. The EPA recently recognized George Mason University as having "one of the most comprehensive recycling programs in the country". In addition Virginia Tech has introduced curricula that integrates P2 concepts into major engineering degrees.

In an attempt to continue successes like these, outreach efforts include an electronic newsletter, a website, and a green procurement project. Entitled *P2news*, the electronic newsletter focuses on the specific needs of state agency P2 contacts and is being distributed via email each month to all interested parties. The website is currently under construction and will summarize the state agency P2 project, its

participants, and successes. The Procurement Workgroup's goal is to provide environmentally-preferable alternatives on the state contract and to facilitate "green" purchasing. The workgroup is coordinated by the Department of General Services Division of Purchase and Supply's Georgiana Ball, and the first meeting is Monday, August 23.

For information on the state agency initiative, contact Keith Boisvert at 804-698-4225 or email at kaboisvert@deq.state.va.us. For questions on procurement, contact

Georgiana Ball at 804-236-3671 or email at gball@dgs.state.va.us.



GREEN CAMPUSES

Thomas Dale High School in Chester has prepared a "Green Campus Plan" and will begin to work on several pilot projects this year. In the Spring of 1999, a committee of officials from Thomas Dale HS and



Chesterfield County worked with DEQ's Office of Pollution Prevention and John Tyler Community

College to assess its various waste streams. For the Fall of 2000, Thomas Dale will focus on some of its "problem" wastes and develop

pilot projects to address those issues. In addition, a green policy statement will be developed for the plan, which will hopefully be endorsed by the school's administration.

The "green campus" program is a derivative of an EPA project that has been piloted and now being developed for community colleges and high schools nationwide. Once that program receives funding, monies for start-up projects will become available. In the meantime, DEQ's OPP and the Chesapeake Bay

Program's Businesses for the Bay is providing support for pilot projects, and limited funding for promotion (plaques, containers, etc.) may be available.

Several other community colleges and associated high/middle schools have expressed interest in the Green Campus program, and DEQ's Office of Pollution Prevention is available to assist in starting a program. If interested, please contact Tom Griffin at 804-698-4545 or rtgriffin@deq.state.va.us.

FLEET MANAGERS TRAINED TO AVOID HEADACHES

On July 30, DEQ co-sponsored a 1-day technical training program, "P2 for Automotive Fleet Managers" at John Tyler Community College in



John Tyler
Community College

Chester. The training was created and

made possible by EPA's Design for the Environment (DfE) project. The enthusiastic main speaker, Dave Boon of the Partnership for Environmental Technology Education

(PETE), provided a mix of regulatory, compliance, and liability issues, interspersed with common-sense P2 solutions. Participants seemed thoroughly persuaded that proactive avoidance of waste problems through P2 was the answer to their regulatory headaches.

The program was taught in a "train-the-trainer" format, such that participants might use the program materials to teach or otherwise

convey the program information to co-workers. Additional program manuals are available through DEQ's OPP, and accompanying videotapes of the program are being developed and will be available in the near future. The event was also



co-sponsored by Businesses for the Bay as a technical P2 training event.

P2 AND ENVIRONMENTAL EDUCATION

DEQ's Environmental Education Program develops environmental curricula supplements and distributes resources to educators in grades K-12 throughout Virginia. In recent years, Ann Regn, Environmental Education Coordinator, has worked with the Office of Pollution Prevention staff to incorporate P2 concepts and activities into the resources they

develop and deliver. The curriculum for the 1999-2000 school year is called "Pollution Solutions" and focuses on source reduction. This new curriculum is correlated to meet Virginia's SOL's (standards of learning), and is available for free to all Virginia educators. This curriculum is developed by the Virginia Resource-Use Council and is funded

by Virginia's Litter Control and Recycling Fund. Contact Ann Regn at 804-698-4442 or at amregn@deq.state.va.us for more information. Also, try out DEQ's environmental education website for kids, the "Kid's Cave" at

www.state.va.us/kids.

Kids
Cave

TOOT YOUR OWN HORN! SHARE YOUR SUCCESS STORIES

If your company is using pollution prevention to decrease its environmental impacts, please let us know about it, and we will help to publicize your good work by perhaps featuring your company in our newsletter or even the Virginia press/papers. We feel that case studies and success stories are the best and most convincing resources for conveying P2 information and

techniques. Also, we are now in the process of creating a library of Virginia success stories that will be available through our web-site, and we would love to include your company. Consultants and engineers also have a significant role in advising companies to think proactively, and we welcome stories from them that highlight innovative source reduction projects.

If interested, please send a brief description of your company's activities to Tom Griffin at rtgriffin@deq.state.va.us or fax to 804-698-4277. You will be contacted for additional information and input, and we may arrange for a site visit if you desire. If we decide to feature you in our newsletter, we will let you draft the article as a guest-writer. Please let us know!

VA CONSULTANT USES DIFFUSION DIALYSIS TO REDUCE WASTES FOR NAVY

By Frank Mitchell, BENMOL Corporation

In a project recently completed for the U.S. Navy, BENMOL Corporation of Alexandria, examined the technical and economic feasibility of using diffusion dialysis technology to recover and reuse the metal-contaminated mineral acids generated in metal finishing operations at Department of Defense (DoD) installations. This technology, which is based on the selective transport properties of ion-exchange membranes, has the capability of recovering 90% or more of the mineral acids from these wastes while leaving behind the bulk of the metal contaminants. Potentially, DoD installations will benefit from decreased purchases of acids and neutralization agents from the implementation of this technology.

The project involved installation of diffusion dialysis systems which were deployed at two DoD maintenance and repair facilities. During the processing, waste and product streams from the units and acids that were recovered by diffusion dialysis were characterized for their utility in the operation from which they were derived.

The first unit was established as a stand-alone, batch operation, and it was used to process two waste acid streams from the facility: spent copper bright dip (a mixture of concentrated nitric and sulfuric acids) and spent magnesium bright dip (a mixture of concentrated nitric acid, water and ammonium bifluoride). Over a period of six months, six 23-gallon batches of spent copper bright dip and two 14-gallon batches of spent magnesium bright dip were successfully processed through the unit. In addition, the facility used the recovered acid from the processed spent copper bright dip as part of a new batch of copper bright dip to qualitatively determine its suitability for direct reuse.

The second unit was directly

integrated with a 4000-gallon chromium stripping bath that employed a 50:50 mixture of concentrated hydrochloric acid and water. The unit was designed to continuously remove and process approximately 10 gallons per day of the metal contaminated acid from the bath and directly return the recovered acid back to the bath. The unit was operated continuously without interruption for a period of 22 weeks.

The results of these field tests indicate that diffusion dialysis is a technically viable means to recover the acid content of these three waste streams and possibly many others. The technology routinely recovered 70-90% of the acids remaining in the waste acids and produced a product



acid that had 80-95% of the acidity of the spent acid and 10-50% of the metals content.

The results also suggest that the product acid

from a diffusion dialysis unit (as seen above) can be directly reused in the process from which it was derived.

The service life of this recovered acid is less than that of the fresh acids, but it is still appreciable. The recovered copper bright dip was reused in combination with fresh bright dip. This mixture, which was 50% recovered and the balance fresh, lasted for 16 days before it lost its activity. Since fresh copper bright dip lasts for about 20 days at the facility, this suggests that the recovered bright dip has about 60% of the service life of the fresh bright dip. Operators of the chromium stripping bath provided expressed complete satisfaction with the diffusion dialysis unit and felt that is improved the efficiency of the chromium stripping solution.

The results further suggest that diffusion dialysis may be successfully applied to other waste acids that

contain nitric, sulfuric, hydrofluoric or hydrochloric acid. However, additional system testing has indicated that certain metals such as cadmium, copper, molybdenum, and zinc were rejected by diffusion dialysis; and some recovered hydrochloric acids may not be suitable for reuse. Therefore, the metal content of the waste solution may adversely affect the performance of the diffusion-dialysis system in certain cases.

Based on the performance results, life cycle costs were estimated for implementation of diffusion dialysis at these two facilities. This analysis indicates that implementation of diffusion dialysis at these two facilities is marginally attractive. The estimated payback period for the initial investments were determined to be 4-5 years for the batch system and 8-9 years for the integrated system. At both facilities, the work-load is less than normal, and therefore, the acid usage is less which hurts the economics of implementation.

For more information relating to diffusion dialysis systems, contact Frank Mitchell of BENMOL Corporation at (703) 683-4288.



P2 and Consulting

There are many good consultants who specialize in performing waste and even P2 assessments. However, all consulting engineers should have an understanding of P2 and source reduction design principles. When designing new facilities of projects, consultants owe it to their clients to consider the life-cycle costs of energy, building materials, waste disposal, environmental compliance requirements and long-term liabilities.

DEQ's OPP does not endorse or recommend individual consultants. For more information on Virginia consultants, reference the Virginia Environment Services Network (VESN) which can be found at www.vesn.org.

ASSISTANCE PARTNERS

ODU'S IAC: ASSISTANCE IN ENERGY CONSERVATION

The Industrial Assessment Center (IAC) is Virginia's best kept secret for energy conservation and waste minimization. Located at Old



Dominion University in Norfolk, the IAC's mission is to provide energy and waste saving recommendations for small- and medium-sized manufacturers. Services are provided to the clients at no charge, and IAC's coverage area extends approximately 150 miles west. The center is funded by the Department of Energy (DOE) and managed by the Office of Industrial Productivity and Energy Assessment (OIPEA) at Rutgers University.

Since the center opened in 1993, over 125 assessments have been performed. Recommended savings due to completed assessments total

more than \$4 million in energy savings, \$1.1 million in waste savings and approximately \$3 million in productivity recommendations. The only cost to the clients is the time spent with the IAC during the one-day plant visit.

Since the services are provided to the clients at no cost, there are certain qualifying criteria that the clients must meet:

- <500 employees;
- >\$70,000 in annual energy costs;
- SIC codes 2000 to 3999;
- <\$75 million in annual sales; and
- No individual onsite dedicated to energy and waste conservation.

The Industrial Assessment Center is headed up by two members of the ODU faculty, A. Sidney Roberts, PhD, P.E., and Bob Michel, P.E. The day to day operations are



Industrial Assessment Center personnel performing on-site energy and waste assessments at client facilities.

handled by the project engineer, Scott Galbraith, E.I.T. For more information about the Industrial Assessment Center or to inquire about the services offered, you may do one of the following:

- **call at (757) 683-6071 or fax your request to (757) 683-5655;**
- **email atiac@odu.edu;** or
- visit the IAC web site at **www.odu.edu/~iac**

AWARDS FOR ENVIRONMENTAL STEWARDSHIP

The Virginia Petroleum Council presented its annual Environmental Stewardship Awards to eight recipients in four categories: youth, adult, organizations and communication/

education. The awards recognize individuals and organizations that demonstrate innovative contributions to protect and enhance Virginia's natural resources. This years

winners and runners-up are listed in the table below.

For additional information on the awards or specific projects, contact the Virginia Petroleum Council's Don Schroeder at 804-225-8248.

CATEGORY	WINNER	RUNNER-UP
Youth	Herndon High School Students Against Global Abuse "Projects for a Safe and Cleaner Environment" Herndon, Virginia	W.E. Waters Middle School SHARK Team "Project SHARK - Recycling, Water Quality, Oyster Bed Restocking" Portsmouth, Virginia
Adult	Jim Waggener "Natural Area at US Army Diamond Lab Facility" Woodbridge, Virginia	Robyn Joiner "Youth Education in Fauquier County" Warrenton, Virginia
Organizations	Prince William Partners for the Potomac "Pollution Prevention Through Community-Based Environmental Education" Prince William, Virginia	Wildlife Habitat Council "Enhanced Wildlife Management of Unused Private and Commercial Lands" Silver Spring, Maryland
Communications/ Education	Chesapeake Bay Youth Conservation Corps "At-Risk Youth Learning Through Environmental Restoration Projects" Chesapeake, Virginia	Pollution Solution Kids "Environmental Education for Youth" Reedville, Virginia

P2 EVENTS CALENDAR

September 20-26, 1999

National Pollution Prevention Week

You can find more information at the NPPR website: www.p2.org (See story page 5).

September 20-23, 1999

EPA Region III's *Chemical Emergency Preparedness and Prevention Conference* in Washington, DC.. Conference registration fee is only \$95 and includes the pre-conference reception and banquet. Registration materials are available at www.epacepp.com. For more information, call 877-804-CEPP.

September 27-29, 1999

Second Annual *Earth Technologies Forum* in Washington, DC. Registration information can be found at www.earthforum.com. For more information, call 703-807-4052.

September 29-October 1, 1999

Annual Meeting of the Virginia Manufacturers Association at the Homestead in Hot Springs, Virginia.

Annual dinner on September 30 will feature presentation of the Governor's Environmental Excellence Awards. For more information, contact the VMA at 804-643-7489.

October 1-2, 1999

Buy Recycled Expo in Fairfax County. For more information, call 703-324-5436 or email at recycle@co.fairfax.va.us.

November 8-10, 1999

Virginia Recycling Association's (VRA) Annual Conference in Williamsburg, VA. DEQ will host a session entitled "Sustainability and the Role of Recycling" from 1-4pm on the afternoon of November 8. For more information, contact the VRA at 804-220-0164.

November 17-19, 1999

National Pollution Prevention Roundtable's *Fourth Annual Fall Workgroup Conference* in Santa Fe, New Mexico. The workgroup conference offers NPPR members the

opportunity to formulate strategies and address the challenges of P2 within intimate and interactive sessions, including three plenary sessions and ample breakout time. For information, please contact NPPR at 202-466-7272.

January 19-21, 1999

EPA Region III's Winter Pollution Prevention Conference in Richmond, VA. The Winter conference will focus on P2 in the Medical Industry. For more information contact the NPPR at 202-466-7272.

P2VA DISTRIBUTION NOTICE

In the spirit of P2, please circulate this newsletter among staff; and if you are receiving duplicate copies or would like to update your mailing address, please contact the OPP staff. Also, past newsletters are now available through our internet website at www.deq.state.va.us.

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